

**What is claimed is:**

1. An image processing apparatus which identifies a mobile object contained in an image captured by a high-resolution camera, comprising:
  - 5 an extraction device extracting as a partial image a part of a high-resolution image captured by the high-resolution camera, and generating a low-resolution image having lower resolution;
  - 10 a detection device detecting the mobile object using the low-resolution image; and
  - 15 a recognition device recognizing the mobile object using a high-resolution image transmitted from the high-resolution camera when the mobile object is detected, and outputting a recognition result.
2. The apparatus according to claim 1, wherein said extraction device extracts a plurality of partial images using a plurality of windows provided and arranged at an upper end, a lower end, a left end, or a right end of the high-resolution image captured by the high-resolution camera, and generates a low-resolution image by arranging the plurality of partial images in one direction.  
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3. The apparatus according to claim 1, wherein  
said extraction device extracts a plurality of  
partial images from the high-resolution image  
5 captured by the high-resolution camera, generates a  
low-resolution image by combining the plurality of  
partial images, and generates a video picture from  
low-resolution images consecutive in a time series,  
and said detection device detects the mobile object  
10 using the generated video picture.

4. The apparatus according to claim 1, wherein  
said extraction device extracts two partial  
images from the high-resolution image captured by  
15 the high-resolution camera, and generates a video  
picture by alternately inserting the two partial  
images as respective low-resolution images, and  
said detection device detects the mobile object  
using the generated video picture.

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5. The apparatus according to claim 1, 2, 3, or 4,  
wherein  
25 said extraction device extracts the partial  
image using a window provided at a closest position  
to a running direction of the mobile object which

enters the high-resolution image captured by the high-resolution camera.

6. The apparatus according to claim 1, 2, 3, or 4,  
5 wherein

10 said extraction device extracts the partial image using a window provided in the high-resolution image captured by the high-resolution camera, and changes a size of the window depending on a form of the low-resolution image.

7. The apparatus according to claim 1, 2, 3, or 4,  
wherein

15 said extraction device extracts the partial image using a window provided in the high-resolution image captured by the high-resolution camera, and changes an angle of the window depending on a traveling direction of the mobile object.

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8. The apparatus according to claim 1, wherein  
said extraction device comprises a storage device storing information about a plurality of windows in the high-resolution image captured by  
25 the high-resolution camera, extracts a portion

showing movement from the high-resolution image captured by the high-resolution camera, selects an optimum window from the plurality of windows, and extracts the partial image using the selected 5 window.

9. The apparatus according to claim 1, further comprising a storage device storing information about a plurality of detection windows in the high-resolution image captured by the high-resolution camera, and information about a recognition window associated with each detection window, wherein said extraction device extracts a plurality of partial images using the plurality of detection windows, and generates a low-resolution image by combining the plurality of partial images, and when the mobile object is detected from a partial image in the low-resolution image, said recognition device extracts a recognition image from the high-resolution image transmitted from the high-resolution camera using a recognition window corresponding to a detection window used in extracting a partial image in which the mobile object is detected.

10. An image processing apparatus which identifies a vehicle contained in an image captured by a high-resolution camera, comprising:

5           an extraction device extracting as a partial image a part of a high-resolution image captured by the high-resolution camera, and generating a low-resolution image having lower resolution;

              a detection device detecting the vehicle using the low-resolution image; and

10           a recognition device recognizing the vehicle using a high-resolution image transmitted from the high-resolution camera when the vehicle is detected, and outputting a recognition result.

15       11. A recording medium recording a program for an image processing apparatus which identifies a mobile object contained in an image captured by a high-resolution camera, the program directing the apparatus to perform:

20           extracting as a partial image a part of a high-resolution image captured by the high-resolution camera,

              generating a low-resolution image having lower resolution;

25           detecting the mobile object using the low-

resolution image;

recognizing the mobile object using the high-resolution image transmitted from a high-resolution camera when the mobile object is detected, and

5           outputting a recognition result.

12. A propagation signal for propagating a program for an image processing apparatus which identifies a mobile object contained in an image captured by a  
10       high-resolution camera, the program directing the apparatus to perform:

extracting as a partial image a part of a high-resolution image captured by the high-resolution camera,

15       generating a low-resolution image having lower resolution;

detecting the mobile object using the low-resolution image;

20       recognizing the mobile object using a high-resolution image transmitted from the high-resolution camera when the mobile object is detected, and

          outputting a recognition result.

25       13. An image processing method of identifying a

mobile object contained in an image captured by a high-resolution camera, comprising:

extracting as a partial image a part of a high-resolution image captured by the high-resolution camera,

generating a low-resolution image having lower resolution;

detecting the mobile object using the low-resolution image; and

recognizing the mobile object using a high-resolution image transmitted from the high-resolution camera when the mobile object is detected.

14. An image processing apparatus which identifies a mobile object contained in an image captured by a high-resolution camera, comprising:

extraction means for extracting as a partial image a part of a high-resolution image captured by the high-resolution camera, and generating a low-resolution image having lower resolution;

detection means for detecting the mobile object using the low-resolution image; and

recognition means for recognizing the mobile object using a high-resolution image transmitted

from the high-resolution camera when the mobile object is detected, and outputting a recognition result.